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PrimaLuna Model Eight CD Player



Spice to Taste

Dick Olsher



Dutch-based PrimaLuna has in recent years garnered much critical acclaim for the phenomenal price-to-performance ratio of its line of tube gear. The business model of European designs manufactured in China is not new *per se*, but PrimaLuna's excellence of execution and product-reliability are definitely noteworthy. Herman van den Dungen, PrimaLuna's progenitor, was already responsible in 1998 for launching the AH! Njoe Tjoeb CD player, a modified Marantz player, which at the time redefined my expectation of what was sonically possible for around a kilobuck. Naturally, I was most curious to find out what Herman and designer Marcel Croese (formerly Goldmund's engineering chief) were up to with the new Model Eight CD player.

From a distance the Eight doesn't look much like a CD player. In fact, if its front panel were taped over, you'd be hard pressed to tell, even close up, that you were looking at something other than a stereo power amplifier. Remove the tube cage and take a peek at the tube complement. Dominating the landscape, Godzilla-like in stature, is a pair of 5AR4 rectifier tubes. There has been a host of small-tube power amplifiers designed over the years with a single 5AR4 rectifier. To find a pair of these in a CD player is most impressive. The power supply is said to be adapted from the ProLogue Three preamp and includes eleven voltage-regulator circuits and extensive filtering. The output stage is a dual-mono cascade design consisting of one 12AX7 and one 12AU7 per channel. The triode sections of each preamp tube are connected in parallel. Coupling caps are Solen; high-quality resistors are used throughout.

The digital circuitry is based on the well-known Burr Brown PCM1792, a 24-bit/192kHz advanced-segment DAC. Digital upsampling is performed by the Burr Brown SRC4192, an asynchronous sample-rate converter designed for professional and broadcast audio applications. Both of these chips require a system clock reference of 8.4672MHz for a sampling rate of 44.1kHz. Rather than use an off-the-shelf crystal oscillator, PrimaLuna opted for a unique clock design, dubbed the SuperTubeClock, which uses a miniature triode as the oscillator element. Since most high-end clock circuits deploy for this purpose an ultra-low-noise transistor with a very wide (GHz) bandwidth, why in heaven's name use a triode? That's precisely the question I posed to PrimaLuna. First, a word about this triode. It is a rugged, long-life,

Russian military tube specifically designed for oscillator applications. It is said to be idling very conservatively so that its life expectancy is roughly 5 to 10 years. The small glass envelope is responsible for an extremely low microphonic signature, and I am told that the tube has proven to be exceptionally reliable with no premature failures to date.

The answer, according to designer Marcel Croese, is that jitter in digital audio is only of concern if it is manifested within a narrow bandwidth of about plus or minus 40kHz surrounding the clock frequency. The clock frequency itself is determined by the crystal, but the purity of that frequency is determined by the noise of the oscillating device. The genius of the tube clock lies in the realization that a narrow-bandwidth triode produces less noise and hence less jitter near the crystal's reference frequency. There is no question that an ultra-wide-bandwidth transistor is very quiet at high frequencies, since such devices are optimized for high-frequency amplification. However, the noise spectrum of high-frequency transistors increases with decreasing frequency ($1/f$ noise), giving rise to much more low-frequency noise relative to a triode in the critical sidebands.

The oscillator circuit produces a sine wave, which needs to be converted to a square wave for timing purposes. That's the job of the comparator IC, and much attention was devoted to the PCB layout around the comparator in order to maintain its fast rise time. PrimaLuna's measured square-wave timing signal at 8.4672MHz, using a Philips analog 400MHz oscilloscope, is superb, and these results are said to exceed the performance of any other commercial clock on earth. The reduction in clock jitter translates to less distortion at the DAC's output. You might say that the higher the clock jitter the more often the DAC suffers from "attention deficit disorder." Conventional wisdom holds that clock jitter below 200 picoseconds is adequate to eliminate its audible effects. However, more recent findings suggest that the threshold of audibility may lie as low as 20 picoseconds.



Special Digital Focus

Unlike any other player on the planet, PrimaLuna offers two upgrade boards for the stock current-to-voltage converter (I/V chipset). The Super I/V board (\$150) incorporates a superior op-amp with a significantly higher slew rate, increased bandwidth, and lower noise. The Super I/V board Plus (\$235) also upgrades the bypass and power-supply caps. Installation is straightforward. Turn the CD player over; remove the bottom; pop out four chips; then plug in the new board.

Kevin Deal, the U.S. distributor, strongly recommended an extended break-in period of at least 100 hours. The player simply needs to be left powered on for this duration; it isn't necessary to actually spin a CD during this time.

My first impression of the stock player was a bit disappointing. Certainly very listenable, but I felt that it lacked detail and that its presentation was dynamically too polite. Since Kevin Deal had kindly provided me with both of the I/V upgrade boards, I quickly proceeded to install the Super I/V Plus board. And I'm glad I did! This upgrade dramatically changed the personality of the Eight for the better.

Initially, I failed to understand the need for two upgrade boards when the price differential between the two is only \$85, a trifle in high-end terms. I voiced the opinion that PrimaLuna should put its best foot forward and make the best I/V board standard issue. Kevin Deal mentioned that some clients preferred the sound of the stock unit in an aggressive system while others would prefer the board with the factory capacitor upgrade. Technically adept readers can choose no capacitor upgrade and then add an exotic brand to suit their tastes. To some extent I can understand why that might be, as the board upgrade opens Pandora's box. Treble speed and detail are increased and may elicit—at least in some systems—a brighter tonal balance. I am convinced, however, that most listeners will prefer the upgraded version and by a large sonic margin. Note that all of the following sonic impressions refer to the upgraded player with the Plus board installed.

It's fair to say that the Eight easily distanced itself from players priced almost two times higher. In heads-up competition with the Esoteric SA60 (\$4600), I preferred the Eight's clarity, low-level detail resolution, and soundstaging. Its most endearing characteristic was rhythmic drive to die for: Unflagging energy that propelled musical lines forward. High on pace, or more descriptively, foot-tapping-friendly, the Eight managed to convey one of the essential ingredients of live music. It brought me a major step closer to the analog experience, and I mean that as a compliment. If only CD playback could approximate good analog sound, but without the pops and surface noise, that for me would represent the ideal state of affairs. The other three pillars of the analog experience that almost all CD players struggle with are stable 3-D imaging, microdynamic conviction, and believable harmonic colors and textures. Since the Eight was scoring well in all of these categories, I wondered how it would fare relative to the best (and most expensive) player in the house—the AcousticPlan Vadi (\$18,000).

Relative to the Vadi, and in the context of the Esoteric MG-20 loudspeaker, it became clear that the Eight's layering of soundstage depth was not as defined and that image outlines were not as palpable. Neither were harmonic textures as pure, being a bit grainier and brighter through the upper octaves. On the plus side, I continued to marvel at the Eight's coherence

and drive, and its resolution of microdynamic shadings was as convincing as those of the Vadi.

At this point in the proceedings I decided to experiment with rolling-in vintage tubes. After all, one of the joys of tube gear lies in the ability to assume the role of sonic chef and spice up the sound to one's liking. I discovered rather quickly that substitution of the 5751, a lower-gain version of a 12AX7, gave much tighter image focus, smoother textures, and greatly enhanced soundstage depth perspective. I tried several brands, including the Sylvania gold-pin, GE 5-star, and a cryogenically treated JAN Philips "Black Sable" being sold by the Tube Depot. These are all good, but my favorite turned out to be the Sylvania gold-pin, though even here I was still bothered by a slight brightness in the upper registers. To ameliorate this I tried a Telefunken smooth-plate 12AX7 and enjoyed its creamy, dark-chocolate-flavored mids and smooth treble, but image specificity suffered. Only when I rolled in a Mullard box-anode CV4003/12AU7 to complement the Sylvania gold-pin 5751 was I completely satisfied. Now, the differences between the Eight and Vadi shrank considerably, and in dynamic drive and soundstage-depth layering I actually preferred the Eight. (In all instances, I found the application of two silicone-rubber tube-vibration dampers per tube from dampers@leveytubes.com smoothed harmonic textures, presumably through the reduction of microphonics. Even if you decide not to roll tubes, be sure to give the dampers a try.)

What a find! At its best, with the board upgrade and outfitted with vintage preamp tubes, the PrimaLuna Eight closes in on even the most expensive competition and seriously threatens to upset the high-end pecking order. It is capable of superb clarity, sensuous mids, and lovely harmonic bloom. Its portrayal of the soundstage is wonderfully transparent, allowing easy exploration of its inner recesses. The music's drama is clearly communicated. And its gift of rhythmic drive is bound to captivate even the most jaded of audiophiles. A no-brainer recommendation at even several times its asking price and a must-audition! **TAS**

☒ Specs & Pricing

Analog outputs: One pair RCA

Digital outputs: One coaxial, one optical

Tube complement: Two 12AX7, two 12AU7, two 5AR4

Power consumption: 50 watts

Dimensions: 11" x 7.5" x 15.5"

Weight: 25.4 lbs.

Price: \$2500 (with remote)

UPSCALE AUDIO (U.S. Distributor)

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Associated Equipment

Final Sound 1000i electrostatic speakers, Esoteric MG-20 and Venture Audio Excellence III Signature speakers; AcousticPlan Vadi CD player, Esoteric SA-60 SACD player; Altmann Micro Machines Attraction DAC; AcousticPlan Sarod preamplifier, Concert Fidelity CF-080 line preamplifier, Spread Spectrum Technologies Ambrosia preamplifier; Silicon Arts Design ZL-120 mono block amplifiers, Son of Ampzilla 2000 stereo amplifiers, AcousticPlan Santor stereo amplifier; Bybee Speaker Bullets; FMS Nexus, Acrotec 6N and 8N copper, Kimber Select KS-1030, Kimber KCAG interconnects; FMS Nexus, Fadel Art Streamflex Plus, Acrotec 8N copper speaker cable